In August 1996, the Federal Communications Commission (FCC) adopted exposure guidelines recommended by the National Council on Radiation Protection and Measurements (NCRP). The NCRP is a congressionally-chartered organization of radiation experts that collect, analyze, develop, and disseminate in the public interest information and recommendations about protection against radiation. The EPA supported the adoption of the NCRP guidelines by the FCC. The new FCC guidelines apply to all radio frequency sources which the FCC regulates, including the new digitally modulated systems. Cellular telephone base stations are known to be low power radiofrequency radiation sources, and the radiation levels in areas accessible to the public fall below the FCC guidelines.

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Electromagnetic Sensitivity - Personal Account

Daniel Karpen - USA
Professional Engineer

I want to convey to readers of Electrical Sensitivity News what it takes to clean up the electromagnetic fields in a typical house.

I live in a 42-year-old modern contemporary house, built by my parents in the mid-1950's. It was a state of the art residence at the time.

I have been sensitive to electromagnetic fields since about 1962, when my French teacher noticed that I was daydreaming in class. Our class of students had just entered a brand new high school. My elementary school had incandescent lighting; I did not realize at the time that the fluorescent lighting in this new school was the source of the trouble until about 10 years later in graduate school.

In my house, I have done the following to reduce or eliminate sources of electromagnetic fields:

- Converted the fluorescent fixture in the dining room to incandescent with a Chromalux color-corrected incandescent lamp.
- Took out and did not replace the fluorescent fixture in the kitchen after a ballast began smoking.
- Disconnected all analog clocks that are driven by small motors of about 1 watt.
- Discontinued extensive use of the fluorescent strip cove lighting in the living room and the strip fluorescent lighting in the basement. These fixtures are now in use less than 30 minutes a month when absolutely necessary.
- Turned off the circuit breaker to the oven, except when it is in use. The clock on the oven broke, but the motor continues to try to run, causing an electromagnetic field in the kitchen.
- Stopped using the radio in the kitchen, except when the refrigerator is running. I found that I could feel the electromagnetic fields from the transformer in the transistor radio from 40 feet away when nothing else is on in the house. However, the electromagnetic fields from the refrigerator are so intense that turning on the radio does not make the situation worse. When the refrigerator goes off, I then turn off the radio. I can feel the electromagnetic fields from the refrigerator from as far away as 80 feet, although very slightly.
- Disconnected the bell signaling system to the basement, which was used as a signal from the living room. This bell signaling system was run on a small unshielded transformer.
- Reinsulated the walls and roof of the house, installed external and internal storm windows to reduce the run time on the boiler and the circulating pumps. Reduced thermostat settings, since the house now felt much warmer.
- Turned off electronic typewriter when not in use for more than several minutes.
- Turned off the telephone answering machine when I am not out. To eliminate the electromagnetic fields from the .8 watt transformer, I ran an extension cord from the wall receptacle to the transformer which is plugged into the extension cord, and put a switch on the extension line so the power is off to the transformer when I am at home.
- I found that I could "feel" the electromagnetic field from my electronic typewriter even when it was "turned off". It was a mystery why, until I discovered that I could also feel the electromagnetic field from my pencil sharpener and the copying machine. These three office machines have one thing in common: each one of them has a three-prong plug. I found that I could not feel any electromagnetic fields from the two-prong plug appliances (when they were turned off), such as the vacuum cleaner or ordinary plug-in lamps and other lighting. Apparently, the neutral in the house is carrying a very small current. My local utility, LILCO, checked out the system, but could measure less than .1 Amp on the neutral with their amprobe. This small current is

being grounded out on the ground wire. However, I am so sensitive to electromagnetic fields that I can feel them.

For a two-prong plug, the neutral may be carrying this small current, but since it is not being grounded out, it has nowhere to go. For incandescent lighting, there is no need for a ground wire, as the current and voltage are in phase.

I now pull out the plugs from the three-prong appliances when not in use. I also unscrew the fuse to my shop in the basement when it is not in use, where I have three-prong plug woodworking machinery.

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Clinical Effects of Electromagnetic Fields (EMF)

William J. Rea, M.D. - USA

(**Editor's note:** The following article is an excerpt from the book **Chemical Sensitivity**, Volume 2, by Dr. William Rea. Reprinted with permission from **Chemical Sensitivity: Sources of Total Body Load.** Copyright Lewis Publishers, an imprint of CRC Press, Boca Raton, Florida © 1994. Reference notations have been omitted; consult the source for citations. Dr. Rea may be contacted at the Environmental Health Center, 8345 Walnut Hill Lane, Suite 205, Dallas TX 75231-4262; phone: 214-368-4132.)

Electric and electromagnetic phenomena are now clearly being shown to affect humans. A segment of the chemically sensitive react adversely to microwaves, radio and TV waves, radar, and high-tension wires. We have diagnosed and treated 150 patients who were sensitive to electrical phenomena. (**Editor's note**: This number is now over 500.) The output of these substances continues to put a demand on the already strained metabolic detoxication system...Clinical effects of EMF have been observed in both animal and human studies. We have seen some of the effects to be described occur in the chemically sensitive.

Cardiovascular Effects. Animals exposed to EMF may exhibit significant changes in electrocardiograms, including sinus arrhythmia and bradycardia. Alterations in heart function, such as falling arterial pressure and increased heart rate, have been noted in humans. Both short- and long-term hypotensive effects have been reported along with decreases in efficient cardiac output. Autonomic nervous system dysfunction was reported in individuals who were continuously exposed to higher levels of EMF. Very-low-frequency exposures were found to cause neurovascular instability in some individuals. Environmental exposures can be very small comparable to the one tenth V/m across a live cell membrane. We have seen cardiovascular effects in 50% of our electrically sensitive patients.

Hematological Effects. Other studies have revealed that EMFs can affect the blood directly or the systems that regulate the blood composition. Cellular blood-composition changes in animals exposed to EMF have been demonstrated in rats, mice, dogs, guinea pigs, and rabbits. Changes in numbers of red and white blood cells have been seen along with decreases in the number of lymphocytes, with increases in neutrophil and eosinophil numbers. While similar kinds of changes occurred after differing levels of EMF exposures in a number of species, the direction of those changes could differ from one animal to another. Iron metabolism and erythrocyte production have also been shown to be affected, and certainly EMF could exacerbate the chemically sensitive by disturbing cytochrome function. The effects of 37 days of pulsed EMF were shown to be similar in magnitude to those following 79 days of continuous-wave EMF. Serum protein, blood globulins, coagulation activity, and fibrinolytic activity changes have been linked with EMF. Leukopenia developed in some rats after single exposure to EMF, and this entity is usually seen in the chemically sensitive. Pulsatile mild stimulation of the adrenergic system was noted by a moderate rise in blood noradrenaline. Alterations in the autonomic nervous system have been seen in most chemically sensitive patients. Therefore, EMF overexposure would further exacerbate the chemically sensitive, as we have seen in many patients.

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Hospital Accommodations

Conny Erkheikki - Sweden

Our county council is building a new hospital here in our county Norrbotten in the very north of Sweden. It will service the citizens of the neighboring towns and also serve as the county hospital for

some 300,000 people. The county council has made big news about the fact that they are trying (my remark) to make the electrical environment safe. This means they will put the transformers in a separate building and not inside the main building, as was done before. They are also using a 5-wire system for the electrical wiring. Normally we use a 4-wire system here in Sweden. Further, all electrical wires are put inside shielded tubes made of a special plastic compound. All centrals distributing electricity are shielded with aluminum plates. The circuit breakers are also shielded. There are 4 wards where one room is made specially for ES people. These rooms are coated with aluminum plates where all electricity can be shut off.

Unfortunately none of these rooms are located in the intensive care unit or in surgery. But maybe it is a beginning. We are trying to convince the management that HF (high frequency) fluorescent tubes aren't healthy. These will be installed in all 5,000 rooms inside the hospital. Further, different working groups demand wireless phones for the personnel. (This probably means 900 MHz here in Sweden.) The lighting fittings have not been purchased yet, so there is still time to influence the management, at least we hope.

This information was given to us at the FEB (The Association for the Electrically and VDT Injured) meeting by a representative from the hospital construction management. The hospital will be ready in 1999.

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ENDNOTES

• **Free MCS Booklet**-A new booklet on multiple chemical sensitivity (MCS), which also mentions electromagnetic fields as a source triggering further illness, is available free from the Arizona Technology Access Program, Institute for Human Development, Northern Arizona University, Box 5630, Flagstaff AZ 86011-5630 USA; phone: 1-800-553-0714.

• **Thermal Exposure Report**-In the publication **Occupational and Environmental Medicine**, a 1997 article from England reported on the symptoms of three antenna engineers accidentally exposed to thermal-level radio frequency (785 MHz) while working near an operating TV antenna.[1] Their resulting symptoms include headache, hot spots on the skin that are sun and heat sensitive, numbness, fatigue, nausea, vomiting, diarrhea, pain, and sleepiness. This accident occurred three years ago. Since then their symptoms have improved, although two of the men still have headaches. The fatigue was slow to leave, taking about one year to abate.

The article also covered background information on hot spots, the known exposure range for this health effect being 400 MHz - 2 GHz at thermal levels. This hot spot incident reminded me of Per Segerbäck, an integrated circuit technician at Sweden's Ellemtel who, along with about 50 others, became ES while using a computer there in the 1980's.[2] Among his symptoms were the occurrence of red patches all over his body which now redden and become painful when exposed to any electricity.

Another symptom presented in the English article was one antenna engineer with a burn accompanied by blisters on the tongue next to a gold filling. The filling was heated by the radio frequency exposure. The SIF labor union in Sweden mentions blisters in the mouth among the symptoms reported by some of their ES computer users.[3]

References

1. Schilling, Christopher J. "Effects of acute exposure to ultrahigh radiofrequency radiation on three antenna engineers." Occupational and Environmental Medicine, Vol. 54, (1997), pp. 281-284.

2. Nordström, Gunni. "In a Special Taxi and an Iron-clad Room." TCO Newspaper, No. 18, 18 June 1993.
Contact: TCO, The Swedish Confederation of Professional Employees, S-11494, Stockholm, Sweden.

3. "Hypersensitive to Electricity." (booklet) Stockholm: SIF, The Swedish Union for Clerical and Technical Employees in Industry. English edition, p. 5.
Contact: Weldon Publishing, PO Box 4146, Prescott AZ 86302 USA.

• **Swedish ES Brochure**-The Swedish labor union SIF recently translated their brochure "Hypersensitive to Electricity" into English. The cover of this color brochure shows a shocking, close-up photo of an ES woman with a computer-related skin rash. The text provides a general overview of computer-related ES in Sweden and the labor union's 1993 ES survey results. This brochure is available from Weldon Publishing, PO Box 4146, Prescott AZ 86302 USA (Cost $5.00 USA; $6.00 Foreign). Thank you SIF!

• **Results of Swedish Amalgam Surveys**-In 1985, the Swedish dental amalgam support group surveyed 519 amalgam patients who replaced their amalgams with non-amalgam material. The survey found that for 80.6% of the 519, health problems improved after amalgam removal. Of the five most common symptoms—muscle/joint pains, tiredness, vertigo, headache, gastrointestinal trouble—at least 75% of the patients with those symptoms reported improve-

ment. Although chemical sensitivity was not specifically mentioned in the survey, general allergy symptoms were reported by 48 survey respondents. Of those, 71% reported lessening of their allergies after amalgam removal. Twelve patients reported electromagnetic field sensitivity; only 42% reported an improvement of ES following amalgam removal. Light/sound sensitivity occurred in 8 patients and 75% had a reduction in this sensitivity.

A later survey of 239 dental amalgam patients in the county of Västerbotten, Sweden found similar results. The five symptoms reported as most severe for the patients were tiredness, headache, concentration problems, muscle pains, and difficulty relaxing. After amalgam removal, the five symptoms reported to most often disappear were metallic taste, sinusitis, vertigo, tender lymph nodes, and eye problems. The second survey was prepared by the Karolinska Institute and the University of Umeå.

Reference

Hanson, Mats. Changes in Health Caused by Exchange of Toxic Metallic Dental Restorations. (booklet) Sweden: Swedish Association of Mercury Victims, 1992.

• **Evaluating EMF Reduction Products**-Common questions I receive ask about specific products advertised as cancelling or otherwise reducing electromagnetic exposure or the effects thereof. My general guidelines for evaluating these products are: (1) If your product does not reduce EMFs which measuring equipment will verify, then I will not be interested in the product; (2) If your product produces an electromagnetic field of its own, I will not be interested in the product.

While each person's sensitivity is unique and some people feel better using a variety of products that do not fit these guidelines, I believe that the majority of the ES will be most benefited by products that do meet these guidelines. Some ES patients have reported worsening symptoms related to using products proclaimed to eliminate EMF's biological effects, but in fact the products produced their own field, adding to the exposure. Also, wearing metal jewelry of any sort may add to ES symptoms whether or not the product produces EMFs, because metal in general acts as a transmitter/receiver of EMFs in the environment.

• **Soviet Documents Available**-Two Soviet documents which explore the technical facets of radiation-related illnesses are still available through the U.S. government office National Technical Information Service (NTIS), 5285 Port Royal Rd., Springfield VA 22161; phone (703) 487-4660. These documents are in English and are suitable for medical doctors interested in exploring nonionizing, nonthermal radiation effects: (1) Influence of Microwave Radiation on the Organism of Man and Animals, edited by I.R. Petrov, (1970), Order #N7222-073, price USA $51.50 plus $4.00 ordering fee; Foreign: $90.50 plus $8.00 ordering fee, (2) Biological Effects of Radiofrequency Electromagnetic Fields, Z.V. Gordon-editor, (1973), Order #JPRS 63321, price USA: $55.00 plus $4.00 ordering fee; Foreign: $97.00 plus $8.00 ordering fee. If you are ordering both books, include only one ordering fee.

• **Annual DOE EMF Conference**-The free annual Department of Energy EMF Conference will take place November 9-13, 1997 in San Diego, California. Scientific abstracts need to be submitted by September 19 to be considered for inclusion. For an abstract submission form or other information, contact W/L Associates, Ltd., 7519 Ridge Rd., Frederick MD 21702-3519; phone: (301) 663-1915; fax (301) 371-8955. Three papers on ES were included in last year's poster presentations and abstracts book, although these were not formally presented at the conference.

• **AAEM Annual Conference**-The American Academy of Environmental Medicine (AAEM) will have their 32nd annual conference at La Jolla, California on October 24-27, 1997. This year's conference will include a session on dental amalgams and their effects on patients' health. For a brochure outlining this session and other topics to be presented, contact AAEM at Box CN 1001-8001, New Hope PA 18938; phone: (215) 862-4544; fax (215) 862-4583. The conference is primarily for medical doctors and other health care professionals. Although ES is not mentioned as a topic to be discussed at the conference, the AAEM Board of Director's meeting there is scheduled to discuss the preparation of an ES fact sheet to be distributed by AAEM.

• **Iridium Satellites**-On July 9, 1997, five Iridium satellites were launched, bringing the total in orbit to 17. All 66 are expected to be launched within one year with global satellite (microwave) wireless coverage available by September 1998. (Source: Arizona Republic and Investor's Business Daily, July 10, 1997.) Of the 17 Iridium satellites in orbit, they have already lost contact with one.[1]

Other large low-earth-orbit (LEO) satellite projects planned for communications include Teledesic with 288 (LEO) satellites, Celestri with 63 (LEO) plus 4 geosynchronous-earth-orbit (GEO) ones, and Globalstar with 48 (LEO).[1]

Reference

1. Krause, Reinhardt. "Big Satellite Investments: Are They Pie in the Sky?" Investor's Business Daily, 30 July 1997, p. A6.

• **More About Cholinesterase**-In the U.S. book **Biological Effects of Magnetic Fields**, Volume 2, written in 1969, the enzyme cholinesterase was studied in conjunction with DC (direct current) magnetic field experiments on animals.[1] In a strong DC field of 17,000 Oe, cardiac arrhythmia could be induced in frogs within 20 minutes. This heart irregularity was not responsive to typical treatments for arrhythmia: glucose, digitalis, or oxygen. The problem was temporarily corrected, however, by injection of a small quantity of cholinesterase. (This injection may have been directly to the heart area as one drawing seems to indicate; however, the particulars of the injection were not given.) This is the first time I have read of using a cholinesterase injection to counteract any EMF-type effect. However, in a paper about organophosphate poisoning from 1962, cholinesterase injection was reported to be ineffective in treating acute chemical poisoning.[2]

References

1. Barnothy, Madeleine F., ed. Biological Effects of Magnetic Fields. (Volume 2), New York: Plenum, 1969.
2. Durham, William F., Ph.D. et al. "Organic Phosphorus Poisoning and Its Therapy." Archives of Environmental Health. Vol. 5, 1962, pp. 21-47.

• **Nonlethal Weapons**-In U.S. News & World Report, July 7, 1997, an article appeared about the U.S. military's progress in devising nonlethal weapons - weapons for crowd control, etc. that do not kill the victims. Among these weapons are devices that use microwaves, lasers (light), and acoustics (sound). According to this article, "...devices that disrupt the electrical impulses of the nervous system can affect behavior and body functions."[1] The laser weapons can cause blindness; the acoustic ones can create nausea, vertigo, vibration, pain, spasms, death; the microwave weapons cause heat, seizures, "stun effect", brain wave and heart rate disturbances, and impaired motor function. Interesting to see that ES-type symptoms can be induced, temporarily, in healthy people at high intensities of these exposures. This article also mentioned one study in which magnetic fields at "undetectable" levels caused histamine release in rats' brain cells. This effect was expected to produce nausea and flu-like symptoms in humans. Soviet research from the 1960's noted a high histamine content in the blood of microwave workers.[2]

Also, ultrasound and pulsed EMF are being used as chemical-free insect repellent in a plug-in consumer device for the home, according to one mail-order catalog. The ad says "Ants, spiders, roaches, mice and rats can't stand it...".

References

1. Pasternak, Douglas. "Weapons." U.S. News & World Report. 7 July 1997, pp. 38-46.
2. Letavet, A.A. and Z.V. Gordon, eds. The Biological Action of Ultrahigh Frequencies. USSR: Academy of Medical Sciences, 1960. (English edition by the U.S. Joint Publications Research Service.)

• **ADA Accommodations**-In my research on accommodating the chemically and electrically sensitive in preparation for our upcoming county meeting, I found that in 1993 the City of Santa Cruz, California, prepared a five-page report entitled "Policies to Implement the ADA" (Americans with Disabilities Act). They include "Electronic Barriers to Access", "Smoke- and Fragrance-Free Environments", and "Toxic, Hazardous and Harmful Materials" among the topics of concern. Their guidelines for addressing electronic barriers are to minimize repetitive sounds and flashing lights, with warning signs posted at entrances where these are operating, accompanied by alternative access to the services provided there. Warning signs will also be placed at entrances where microwave ovens may be in operation. The ovens will be placed as far away from public exposure as possible. Fluorescent lighting should not flicker and portable lamps will be made available when fluorescent lighting is not suitable for the participating employee or citizen. A copy of this policy statement is available from the City Clerk, City Hall, 809 Center, Room 9, Santa Cruz CA 95060; phone (408) 429-3784.

• **Satellite Dishes**-Rick Arnow would like to communicate with the ES who have suffered health effects from receive-only satellite dish antennas, i.e. TV satellite dishes. His mailing address is: 188-04 64th Ave., Apt. 12-F, Fresh Meadows NY 11365 USA.

• **Petition Drive**-Susan Clarke, who gathered signatures from Harvard and Boston University opposing Sprint's PCS system in Boston, would like to gather signatures elsewhere. She is circulating petitions opposing pulsed microwave communication systems, to be signed by doctors and scientists in the U.S. and Canada. To help with this project, contact Susan Clarke, ENHALE, Box 425, Concord MA 01742.

• **Cellular Sitings**-What is going on with cellular towers where you live? I am finding that the large cities and the towns along major highways are where most of the ES complaints are coming from. Please drop me a note about your area so I can include this information in a future newsletter.

- ES BASICS -

The following general tips are ways some electrically sensitive (ES) patients have adapted their environment to maintain an independent life. However, for the severely ES, many of these techniques will not be enough and total EMF (electromagnetic field) avoidance is necessary. Please note that gas appliances are not an option for the chemically sensitive (MCS) patient. Also, exposure to gas emissions from gas appliances may in time lead to MCS in some people.

Appliances - Testing with a gaussmeter before purchase is helpful. Some appliances produce stronger fields than others; some turn on and off more frequently than others. Example: An iron that turns off and on more times in a given period than another iron produces a high EMF power surge each time it turns on and is more problematic. Unplugging appliances not in use is helpful as some appliances produce a measurable field when plugged in but turned off. Distance from the operating appliance is helpful. Non-electric sources are preferable when possible (toothbrush, can opener, razor, etc.).

Car - Older cars with less electronics are best. If the patient cannot tolerate the motor running while sitting in the front seat (assuming the car's motor is in the front), then a larger vehicle with a back seat may be helpful.

Computer - None in the home and none operating in the vicinity of the patient are best. Reaction ranges can exceed 40 feet, depending on the patient's sensitivity.

Cooking - Microwave ovens are most troublesome; electric ranges are often troublesome too. A hot plate or a toaster oven may be helpful especially if kept at a distance while cooking. Gas ranges are an option for the non-chemically sensitive.

Housing - Multi-dwelling accommodations are most troublesome—apartments, hotels, motels, condominiums, etc.—because the surrounding environment cannot be controlled. A single-unit dwelling is best. The more remote the location, the better for reducing wireless communications exposure.

Lighting - Ordinary incandescent bulbs are better than fluorescent ones to reduce EMF exposure. Energy-efficient, electronic ballast bulbs are most problematic for the ES. Some find full-spectrum bulbs helpful, but these are generally of the fluorescent variety which have stronger EMFs than incandescent bulbs. Sun-sensitive and light-sensitive patients may require special lighting conditions. Dimmer switches should be avoided due to their high EMFs.

Metal - Metal attracts and re-radiates EMFs of all sorts. Reducing metal in and around the home is helpful; if metal is used for EMF shielding it should be grounded to reduce reactions. Metal jewelry is often troublesome and best not worn.

Phone - Some are able to use a speaker phone which does not have a transformer.

Refrigerator - Either turning the motor off (by using the knob inside the refrigerator) or unplugging the refrigerator for short periods of time (1 hour or less is best) while you are in the kitchen avoids the motor's EMFs. Gas refrigerators are an option for the non-chemically sensitive.

TV set - None in the home is ideal; some still watch TV, but at a distance—the further away the better. Reaction ranges can exceed 40 feet, depending on the patient's sensitivity.

Wiring - Measuring magnetic fields in the home with a gaussmeter can determine whether any unusual elevated magnetic fields are present, which may represent a wiring problem creating unnecessary magnetic fields. Also, turning off the electric current to the bedroom at night is helpful to promote sleep. Be sure necessary appliances are not accidentally turned off when turning the bedroom circuit off—refrigerator, etc. Obtain proper assistance with wiring problems, circuit shutdowns, and metal grounding to reduce the risk of electric shock or electrocution.

Comments and suggestions are welcome.

Electrical Sensitivity Network, PO Box 4146, Prescott AZ 86302 USA.

ELECTRICAL SENSITIVITY NEWS

An international newsletter about the latest environmental illness—electrical sensitivity from electromagnetic fields

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Nervous System Effects

Environmental Protection Agency
Washington, D.C.

(**Editor's note**: This article represents excerpts from the December 1992 U.S. Environmental Protection Agency booklet entitled "Electric and Magnetic Fields: An EPA Perspective on Research Needs and Priorities for Improving Health Risk Assessment", document #EPA/600/9-91/016F. This document addresses health effects research in the 0-500kHz range.)

HUMAN

Neurotransmitters and neurohormones are substances involved in communication both within the nervous system and in the transmission of signals from the nervous system to other body organs. These regulatory chemicals transmit information and regulate or modulate various bodily functions that range from the learning of new skills to the control of heart rate and blood pressure. Neuroregulatory chemicals are released in pulses with a distinct daily or circadian pattern. Serotonin, melatonin, dopamine, and noradrenaline have been the focus of much attention in the brain sciences. Aberrant levels of these neurochemicals accompany clinical disorders like depression and many of the drugs used to treat these diseases interact with these neurochemicals. Their metabolites can be monitored in easily accessible body fluids and provide information about the role of neuromodulators in disturbed nervous system function.

Data of this type from exposed human subjects are not available but relevant animal experiments report that neurotransmitter metabolite levels are lowered in primates and that circadian patterns of neurotransmitters and their metabolites are desynchronized in rodents exposed to EMF. The few studies in which human subjects have been exposed to EMF in controlled laboratory settings describe the following effects: changes in brain evoked-potential indicative of possibly slowed information processing, slowed reaction time and altered behavioral performance in which ability to gauge the passage of time was a pivotal component, and altered cardiovascular function including slowed heart rate and pulse that may indicate direct action on the heart or the neurochemicals controlling cardiac function. Results also indicated specific combinations of electric and magnetic fields may be necessary before alterations are observed.

Melatonin, a hormone released by the pineal gland during the dark period of the daily cycle, may be an important marker for certain health effects of EMF. Alterations in the circadian pattern of melatonin accompany depression, "jet lag," and "shift lag," which can occur from rotating shift work schedules. Disruption of physiological functions, such as sleep, that are synchronized with melatonin secretion are symptoms for all three conditions. Body temperature is also synchronized with melatonin rhythms. When humans isolated from external time cues are exposed to electric fields their sleep-wake periods and core temperature patterns reportedly shift. Manipulation of the light-dark cycle is used to treat depression, and "jet lag" symptoms are ameliorated after treatment with light or melatonin. Night-time pineal

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Lucinda Grant, editor of the newsletter, is founder of the Electrical Sensitivity Network and author of *The Electrical Sensitivity Handbook.*

WARNING: Environmental illness is a complex topic.
Methods or treatments that benefit some people may harm you. Readers are advised to consult appropriate medical, legal, or other professionals for personal guidance prior to making changes in their current program.

melatonin levels are reported to be suppressed in rats exposed to electric fields and intermittent magnetic fields. EMF may also suppress nocturnally high levels of melatonin in human beings. In one study, the use of electric blankets configured to allow frequent on/off switching of the magnetic field that was 50% greater than that associated with a conventional electric blanket, was shown to reduce the nighttime urinary excretion of melatonin's major metabolite. A possible link between EMF-induced alteration in melatonin synthesis and cancer has been hypothesized. Studies with rats show that EMF can suppress the melatonin level in the dark phase of the daily cycle. This action of reducing melatonin may possibly increase the potential for cancer because melatonin is known to inhibit the growth of some cancers...

Research on the nervous system should further examine physiological, neurochemical, and behavioral endpoints in human subjects reported to be sensitive to EMF. Laboratory studies on the effect of EMF on the behavior of laboratory animals should emphasize learned tasks and drug interactions. A primary goal is the identification of effective exposure conditions, such as possible differential effects of electric and magnetic fields. The consistent finding that EMF affects melatonin synthesis in the pineal gland should be further investigated. Neurophysiological, neurochemical, and behavioral effects in both human studies and laboratory experiments may be generally regarded as hypothesis-generating and do not merit the level of concern for cancer such as childhood leukemia. For these reasons, research on the nervous system is a medium priority...

RECOMMENDATION: Work should continue with human subjects in controlled laboratory settings where exposure to real and sham fields occur under double-blind conditions. Physiological and behavioral endpoints previously reported to be sensitive, as well as those reported in animal studies, should be monitored before, during, and after exposure to EMF. Because of the suspected role of altered melatonin rhythms in clinical disorders and in cancer, other studies should determine if EMF can alter the circadian pattern of melatonin and its metabolites in body fluids. Related research should assess the role of melatonin, if any, in the suppression of cancer in human beings. Particular attention should be directed to whether the rate of activation and deactivation of the field (intermittent exposure) has a more marked effect than continuous application.

ANIMAL

Studies examining the related areas of behavior, circadian rhythms, and neurochemistry have been the focus of laboratory animal research concerned with EMF and the nervous system. Behavior is the integrated output of the nervous system and alterations in circadian patterns or neurochemical levels are often reflected in behavioral changes. Physiological and biochemical processes have a synchronized daily cycle or circadian rhythm and aberrant rhythms have been linked to a variety of disorders. Such disorders range from altered sensitivity to drugs and toxins to sleep, performance, and psychiatric disorders, including chronic depression.

The performance of both spontaneous and learned behaviors is affected by EMF. Studies of spontaneous behavior have provided data on the threshold and possible mechanism of perception of 60 Hz electric fields. Although detection thresholds vary according to species, it is generally believed that fields are detected by mammals with fur or hair, including humans, because hair vibration caused by the oscillating electric field activates sensory mechanisms in the skin. No perception mechanism for magnetic fields is known except for the visual effect in humans known as magnetophosphenes or phosphenes (light flashes) caused by high intensity magnetic fields. This phenomenon, which exhibits a threshold and is highly frequency-dependent (maximum response in the 20 to 30 Hz range), is apparently caused by induced electric fields in the eye that stimulate the retina. Thus, a pulsed magnetic stimulus is interpreted as flashes of light by the brain.

The performance of several learned behaviors in animals is reported to be affected by EMF. The reaction time of non-human primates is compromised by exposure to electric fields. Rats trained to respond with a certain pattern and rate of behavior to earn rewards are less efficient when exposed to EMF. Magnetic fields decrease the sensitivity of mice to the pain-relieving action of drugs such as morphine and other opiates. Sixty-Hertz magnetic fields also reduce the number of seizures induced in rats by an epileptogenic drug. The latter studies indicate that research incorporating a drug challenge may help to identify the interaction of EMF with the nervous system.

Research results also suggest that circadian rhythms can be altered by EMF. In nonhuman primates, patterns of food and oxygen consumption were affected by field intensity; for some monkeys, these altered biological rhythms persisted after the cessation of exposure. Other work shows that 60 Hz

electric fields produced phase delays in activity and metabolism rhythms in mice. In addition, exposure to electric fields has been shown to affect the circadian rhythm of serotonin, noradrenaline, and dopamine in rats. As mentioned previously, alterations in the level and rhythm of neurochemicals with respect to the natural daily light-dark cycle may have implications for sleep and mood disorders, including chronic depression.

One of the most consistent neurochemical findings is that the circadian pattern of melatonin synthesis in the rat can be altered by EMF. Melatonin levels vary with the daily light/dark cycle and are higher in the dark phase. The finding that EMF can suppress the higher melatonin level in the dark phase may possibly be related to purported carcinogenic effects of EMF because melatonin inhibits the growth of some cancers. A possible link between EMF-induced alteration in melatonin levels and cancer development requires study.

RECOMMENDATION: Studies of EMF effects on behavior of laboratory animals should emphasize learned tasks and drug interactions. Other work should determine whether the effects of EMF on circadian rhythms and neurochemical levels are significant in related areas such as behavior and cancer. The consistent finding that EMF affects melatonin synthesis should be the focus of studies to determine the sites and mechanisms of interaction. Related research should better define the role of melatonin in suppression of cancer in animals. A primary goal of research on EMF and the nervous system is to define causative exposure conditions; particular attention should be given to the possible differential effects of electric versus magnetic fields.

(Editor's note: A working group appointed by the World Health Organization (WHO) and the International Radiation Protection Association (IRPA) published their collective EMF research recommendations in the 1993 book **Electromagnetic Fields (300Hz to 300GHz).**[1] They mentioned nervous system effects, particularly cognitive effects, as a topic needing a high research priority. Low frequency electric field sensitivity was attributed to the exposure causing hair on the skin to vibrate, as the EPA mentioned above. They further speculated that other sensory receptors in the skin may also be involved in electric field sensitivity. Some studies have shown animal sensitivity to an electric field as determined by their avoidance of the field under laboratory conditions.[2] This book does not mention possible mechanisms of magnetic field sensitivity.)

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1. Electromagnetic Fields (300Hz to 300GHz). Geneva, Switzerland: WHO, 1993.
2. American Medical Association. Effects of Electric and Magnetic Fields, Report 7 of the Council on Scientific Affairs (I-94), (Reference Committee E), p. 24.
Contact: Council on Scientific Affairs, AMA, 515 N. State St., Chicago IL 60610.

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Stray Voltage Update

Duane A. Dahlberg, Ph.D. - USA

The major issue in the stray voltage problem is the determination of the specific mechanism responsible for the effects in the dairy barn. The fact that the dairy farmers find a strong correlation between their health and the level of problems for the dairy herd suggests that the cause is not simply the effects of the currents passing through the body from contacting two points in the barn. At the same time there is a strong connection between the behavior, health and production effects for the cows, the health problems for people, and the addition of 60 Hz currents in the earth in the region of the farm. Finding and correcting an electrical problem on a farm or nearby farm which has caused electrical current to get into the ground is commonly correlated with a significant improvement in the behavior, health and production of dairy cows and the health of the people on the farm.

Our experience in the dairy barn is that reducing the resistance (increasing the conductivity) of the material between the feet and the floor of the barn is more likely to increase the effects for humans. If the barn is more problematic, the reasons may rest in the higher conductivity associated with quantity of liquids, the salts from the cows' effluents and the electrical nature of the concrete floor. For all confined livestock including everything from chickens to horses, the concrete floor significantly increases the level of effects. From my work with people exposed to the 60 Hz currents, living and working on concrete increases effects. For that reason I would not be surprised that the health problems associated with shopping malls and large stores on concrete slabs are not partially the result of electrical expo-

sure associated with the floor or earth under the floor. In the dairy barns neither the type of barn nor the type of milking equipment assures the dairy operator that stray voltage will not affect the cows. In addition a mitigation method recommended to the farmer which increases the conductivity of the floor in general increases the behavioral, health, and production effects in the dairy herd.

A common thread running through case studies of health effects near transmission lines is the electric conductivity of the earth materials in the region around the transmission lines. The greater the water content of the soil and the greater the ion concentration of the water the more likely that people living near the transmission line will experience health problems. This same thread runs through the case studies of stray voltage. Again dairy farms near lakes, wet land, streams, aquifers and rivers frequently experience the more severe stray voltage problems.

The studies conducted which have looked for possible correlations between leukemia in children and wire configurations in general showed a positive correlation. When the actual magnetic fields were measured, the correlations weakened. A logical reason for the weakening of the correlation is the existence of another important electrical parameter such as the electric field resulting from the grounding of the neutral wire or electric current in the earth and therefore in the homes. This parameter may be as important as the magnitude of the magnetic field in increasing leukemia in children. In considering only the one electrical parameter the probability of finding a correlation can be considerably smaller. Since the possible health effects from electrical exposure include many types of cancer as well as numerous other illnesses, considering only one health effect is likely to produce only weak correlations at best.

(**Editor's note:** This article reminded me of a book called **Earth Currents**, about geopathic stress, written in 1932. The book relates that homes built with iron girders radiate any adverse electromagnetic fields from the earth. Sensitive people were reported to be "in agony" when sitting on the floor above these iron girders.[1])

Reference

1. Freiherr von Pohl, (Baron) Gustav. Earth Currents: Causative Factor of Cancer and Other Diseases. Feucht, Germany: Fortschritt fuer alle-Verlag, 1983, (English reprint).

Microwave Shielding

Lucinda Grant

The following general historical information regarding shielding of microwave frequencies is provided by the noted references:

Soviet

The 1960 book entitled **The Biological Action of Ultrahigh Frequencies** mentions general 300MHz - 3000GHz range shielding.[1] Both solid metal shields and metal mesh shields are discussed. Solid was considered preferable to mesh for more complete shielding. No specific types of metal were noted as more beneficial than others.

Metallic mesh was graded according to the reduction provided in decibels (dB). According to this source, a high degree of shielding is necessary to eliminate interference (100 dB or more). This publication considered 40 dB of protection adequate for shielding workers in most cases. (However, the Soviet microwave workers were still becoming ill, even after shielding was implemented to reduce their on-the-job exposure.)

For 3 centimeter (low GHz) microwaves, wire mesh using .25 mm wire with 81 cells per cm^2 gave 42dB protection; .08 mm wire with 559 cells per cm^2 gave 50 dB protection. In comparison, a 70 cm thick wall only provided 21 dB of protection against 3 cm microwaves. For 10 centimeter (low GHz) microwaves, .2 mm wire with 64 cells per cm^2 gave only 20 dB protection; .08 mm wire with 551 cells per cm^2 gave 41 dB protection. The 70 cm wall only gave 16 dB protection against 10 cm microwaves. Protective goggles in use needed to reduce ultrahigh frequency (UHF) by at least 20-30 dB.

Poland

The 1976 book **Biological Effects of Microwaves** mentions goggles and other protective clothing for microwaves.[2] It warns that this type of clothing can be dangerous for the wearer if it becomes torn. (Apparently it will then concentrate the radiation inside.) Also, they warn that these protective clothes will reflect radiation toward other workers in the area, who may not also be protected. Clothing specifics were not given. These problems point out the potential situation if a person were to shield part of their home (i.e., a closet, one room, etc.) as an EMF shelter and not shield the rest of the house.

Outside of the shielded area, the room's shielding could re-radiate EMF which may concentrate radiation in other areas of the house - especially if the shielding is not grounded.

Czechoslovakia

Solid metal and metal mesh are both mentioned as ways to shield UHF (300MHz - 3000GHz) in general.[3] The type of wire mesh used varies with the wavelength of the EMF, with the wire's diameter and the mesh's cells per cm^2 being the variables adjusted to maximize the shielding in each case.

Protective clothing (*circa* 1971) were noted to be unsatisfactory in practice due to insufficient ventilation. These were made with metallic fiber, wire matting, or metal foils. Protective goggles were made with a wire mesh inset or using a gold film evaporated on glass. Protective goggles were considered most important for microwave workers who wore regular eyeglasses as the eyeglasses could concentrate radiation near the eyes.

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1. Letavet, A.A. and Z.V. Gordon, eds. The Biological Action of Ultrahigh Frequencies. USSR: Academy of Medical Sciences, 1960. (English edition by the U.S. Joint Publications Research Service.)
2. Barański, S. and P. Czerski. Biological Effects of Microwaves. Stroudsburg PA: Dowden, 1976.
3. Marha, Karel, et al. Electromagnetic Fields and the Life Environment. San Francisco: San Francisco Press, 1971.

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Neurontin Helpful

Pam Montagne - USA

After three months of Neurontin, I have lost almost all of my ES. Can again watch TV and VCR - even cook with a microwave oven. I would say I'm 70% better overall. I can go shopping in stores - haven't been able to do that in 8 years. My sleep is great! Wow!

The details:

In February 1989, I was sprayed with Diazinon by a custodian while teaching school. In March, I went to a detox clinic. By December I left all my belongings and wintered in Mexico, living in a tent in the desert. It was then that my ES became apparent and gradually worsened.

May '90 - Began a 3 year, 100,000+ mile odyssey of the West (Canada to Mexico) in a solar-powered trailer. Never hooked up to electricity for 2½ years.

May '93 - Could not tolerate TV, appliances, VCR, air conditioner.

June '93 - Found Dolan Springs, Arizona. Got back all appliances, TV.

Oct '94 - Used regular heater 20 feet away from me - 24 hours a day. Lost tolerance of appliances, TV, VCR; uncomfortable around lights of all kinds. Had seizures from fluorescents; regular lights caused symptoms of a heart attack. Gradually got better. EMF tester, John Banta, helped fix the house. VCR made me catatonic. Thirteen-inch TV could be watched using a mirror, with TV wrapped in foil, for ½ hour to 1 hour daily.

May 31, '97 - VCR still made me catatonic.

June 1, '97 - Began Neurontin. In the first ½ hour, my hands and feet became normal temperature, stopped tingling/burning. After one day, I slept normally, my joints loosened and fibromyalgia was gone. After one week, I could watch TV 5-6 hours. Used VCR to watch first movie in years. (The VCR must be outside about 30 feet from the TV. We put it in my sauna.) At 13 days, for the first time in 8 years visited K-Mart, hospital, Smith's (grocery), Wal-mart. Took a 45 minute drive to Kingman, Arizona with no oxygen tank. No reactions except to chlorine.

Now I watch TV all I want. Appliances no longer bother me. Can be under fluorescent lighting. No feeling of ill health crossing Hoover Dam. Still have minor problems - can't watch large TV or use computer. I got the Neurontin info from Dr. Jay Seastrunk in the Dallas, Texas area. My MCS doctor agreed to prescribe it for me. My dosage is 4000 - 4800 mg. daily. I also follow very strict MCS rules and have a safe house in an isolated, low EMF area. Also, I take titrated antigens. I don't use magnesium supplements with the Neurontin. The drug company has a reduced cost/no cost program. (Also, I take Effexor, an antidepressant prescription drug. I have used it before Neurontin and after to help cut down on chemical reactions.)

I'll be happy to talk to anyone about my experience with Neurontin and the rest of my medical/environmental program after 9 AM (Mountain Time); phone: (520) 767-4602.

(**Editor's note**: The prescription drug Neurontin is manufactured by Parke-Davis, 201 Tabor Rd., Morris

Plains NJ 07950; phone: 1-800-223-0432. For information about the low/no-cost Neurontin program for the poor, contact Parke-Davis at 1-800-755-0120.

While some ES and MCS are helped by Neurontin, some are not and have had to discontinue its use due to side effects. I have noticed that those who seem to benefit most from Neurontin are those who have had seizures in the past; Neurontin is an anti-seizure medication. Contact information for Dr. Jay Seastrunk: PO Box 382149, Duncanville TX 75137; phone: (214) 709-4834.)

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Graz Conference Overview

Lucinda Grant

On September 26 and 27, 1994, the European Union (EU) sponsored a scientific workshop called "Electromagnetic Hypersensitivity" as part of the COST (European Cooperation in the Field of Science and Technical Research) 244 project: Biomedical Effects of Electromagnetic Fields. The conference was held in Graz, Austria with eighteen papers presented from eight countries. Sweden's doctors and scientists gave eight of these presentations.

The conference papers focused primarily on basic research questions - what ES symptoms were occurring, whether/how the symptoms could be provoked, and what percent of a population is ES.

Representatives from Sweden's National Institute of Occupational Health reviewed symptoms they commonly encountered among the ES:

> *"Most report diffuse skin symptoms in the face such as redness, hot burning sensations, pain, itching and dry skin. Neurasthenic symptoms include dizziness, headache, heart palpitations, loss of memory and concentration. Some of the afflicted group also report that they suffer from sensitivity to light, both due to sunlight and fluorescent light."*[1]

Computer monitors were the most common EMF exposure to trigger these reactions, according to their patient questionnaire.

Attempts by some of the doctors and scientists to monitor symptom changes among the ES when EMF exposed were not successful. However, in one Swedish study (Sandström, et al), the ES group studied was found to have a higher level of sensitivity to flickering light than a non-ES control group. Their findings were determined by using EEG, EKG, electroretinography (ERG), and visual evoked potential (VEP). (This study was later published in the American **Journal of Occupational and Environmental Medicine**.)[2]

Another Swedish study (Johansson et al) examined the quantity of mast cells on the facial skin of ES patients suffering EMF-triggering skin symptoms versus a non-ES control group. The study found a significant mast cell distribution among the ES relative to the control group. Both groups were exposed to TV set EMFs prior to the skin test. Mast cells are important in allergic-type reactions, as the cells can release the irritant histamine when provoked.

The Austrian and German presenters attempted to assess what portion of the population is ES. In a Graz, Austria phone survey of 200 people, 19.4% of the women said they were moderately sensitive to EMFs and another 10.5% said they were very EMF sensitive; 8.2% of the men said they were moderately EMF sensitive and another 9.6% said they were very EMF sensitive.

In Germany, of those who called the University of Witten/Herdecke asking about EMFs, 5% said they were ES. Another seven percent of the calls received were from doctors inquiring on behalf of their ES patients.

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2. Sandström, Monica BSc, et al. "Neurophysiological Effects of Flickering Light in Patients with Perceived Electrical Hypersensitivity." Journal of Occupational and Environmental Medicine, Vol. 39, No. 1, January 1997, pp. 15-22.

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Put the lights out - Maggie's coming!

Torbjörn Uhlin - Sweden

(This article is reprinted by permission from the Swedish magazine **Working Environment**, Box 17550, S-118 91 Stockholm Sweden. (English Edition, 1993, pp. 16-17.)

When the class is using the projector Margareta Werner goes outside and knocks at the window to

change the slides. She puts out the lights on her way through the school, and staff meetings are held by candlelight.

All this is accepted procedure. "Maggie's coming."

Electro-hypersensitivity is an increasing problem in computerised societies. The people affected are mostly those who work at display terminals and they are often senior employees.

Walking around with *Margareta Werner*, a teacher of physics, mathematics and computer technology at Fridhem county college in south Sweden, is like being guided by a test instrument for electromagnetic fields. Her "Elfix" meter purrs and blips when electric fields get too strong near cables, plugs and lights. Another instrument measures magnetic fields.

She hurries past certain spots where there is live wiring, slows down again only to gather speed at the next "electric wall." She avoids going near walls, especially wood and plaster ones with unprotected electric wiring in them. Such walls emit strong electric fields.

On her way through the rooms she puts out the ceiling lights. She switches them on again when she leaves.

In the corridor outside the canteen there is a magnetic zone where she does not want to linger. Inside the canteen she turns off the ceiling light, gets her food and walks to the other side of the hall to eat - while the light is switched on again in the first part of the room.

Late afternoon staff meetings are held by candlelight if Margareta is to take part. At the beginning, she even held her lessons by candlelight, but now her classroom has been adapted to her needs. All electric wiring in the room itself and in adjacent walls and ceilings has been screened off. The wires have got an earthed metal net, the switches have been earthed by means of metal casings, five spotlights have got metal netting and the fluorescent tubes have been earthed with net screens.

"Even so, I can't stay in the room if the fluorescent lights are on. My students accept rather inadequate lighting for my sake, but I am hoping that more screened ordinary bulbs will be installed so that we can see better," she says.

She has had to give up the computer training. Math is not too problematic, but she does have to correct test papers by candlelight.

Physics is alright, with modifications. The pupils do their laboratory work without their teacher. She prepares what has to be done, plugs in, and leaves. Sometimes the school caretaker does the demonstrations, sometimes the students themselves do them.

The ceilings of the library and the common room have been equipped with earthed aluminium foil. The electric installations of the staff room and one lavatory have now been totally screened.

Margareta has never been met with suspicion or animosity in her workplace. Everybody takes her hypersensitivity seriously.

She has been sensitive to electricity for a year and a half. Her problems started when the school got two new computers. Her face began to "burn" when she was sitting in front of the display screens. Before that she had worked at computer screens for many years without any problems.

The "burn" appeared again and again in the computer room and disappeared when she left the room.

Then the same thing began to happen when she was near ordinary light bulbs.

The next stage came on May 8 - Margareta remembers the date clearly. She was sitting at the display screen when she got a sudden headache and could not concentrate on what she was doing.

She had to talk aloud to herself to keep on working.

Her new symptoms were not to be swept away: skin rash on the face, chapped lips, concentration difficulties, headache, nausea, stomach trouble, painful lungs, breathing difficulties, neck, back and chest pains.

Margareta was put through a week of tests in an experimental room in Malmö. The experts found that she was sensitive to alternating current but not to direct current. Low radiation "MultiQ" display screens with floating crystals, which ease the symptoms of some electro-hypersensitive persons, were of no use to her, nor was an arrangement where the computer was screened off in a separate box.

Direct current has not been installed in Margareta's schoolhouse since it was enough to screen off the alternating current wiring.

"Being hypersensitive to alternating currents I miss the old days when direct current electricity was in use everywhere," Margareta says.

Life at the school may have gone through some great changes because of Margareta's hypersensitivity but her family's life has been turned upside down. The necessary long hours of darkness at home have been a great strain on her husband and daughter.

"At the beginning, my husband suffered more

from my hypersensitivity than I did myself. He was forced to share the darkness with me but still felt that he could not help me. Not until six months after the problem started did we confess to each other how terrible the dark evenings and nights were for us. It is an unnerving experience not to be able to turn the light on when you wake up in the night."

All shopping, cooking and vacuum cleaning have to be done by her husband and daughter, because Margareta is affected by the electricity in shops, and by the electric oven and other household appliances.

It would cost 35,000 kronor (£3,000) to screen the electric installations in the house. The Werners have applied for a municipal grant to have it done but, as in other cases of hypersensitivity, they met with little or no understanding.

The National Social Welfare Board does not recognise electro-hypersensitivity and other authorities follow that policy. Medical authorities are reluctant to support research in this area.

"It is not easy to get medical help, but I have found a doctor who was sympathetic and gave me a certificate. I am going to use it to apply for a grant. But it is more important for me to be accepted as electro-hypersensitive than to get the money. It should be our lawful right to get financial help, though," says Margareta who is active in the Society for People with Electrical Hypersensitivity.

Margareta rejects the idea that stress or pressure from psychological or social factors at work should have caused her hypersensitivity.

"I have never had a feeling of stress and I would not have stayed on my job for 21 years if I did not like it."

There are solutions and strategies that you can make use of if you are beginning to have hypersensitivity symptoms. Therefore it is important that everyone who is beginning to feel the first symptoms starts by admitting them. Safety representatives must keep an attentive eye on this, since doctors are often sceptical, Margareta advises.

"I was too proud to leave the computer in time. Therefore I shall probably never get rid of my severe symptoms. But if you don't let things go as far as I did, and if you can get help early, you may overcome the problem."

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EMF Diary - Sweden

Leif Södergren

CHEMICAL POISONING-EPOXY-FLAME RETARDANTS

In the 1970's, in a factory in northern Sweden, around 40 factory workers showed some very strange symptoms. They became light sensitive and could not stand daylight, fluorescent lights, could not watch TV—symptoms quite similar to what electrically sensitive individuals show.

The factory had to close since the cause of the problems could not be found. Later it turned out that an epoxy paint powder had gotten into the heating system when used to paint some details and, due to some mistakes, was passed over a very hot surface. It was spread in the ventilation system. The workers received workers compensation.

What is so interesting about this incident?

1. The symptoms are very similar to ES patients who also cannot stand fluorescent light, computers and TVs, and sometimes cannot stand daylight. These factory workers had not worked by a computer and the name Electrical Sensitivity did not exist. Many workers are still very sensitive. One factory worker was quoted in the TCO newspaper recently: "If I go into a department store, I get a heat-feeling in my skin after 10 minutes. This lasts until the next day. These days I can watch TV. Before I could not stand the electric fan in the car and I could not stand perfume. That really killed me." These are interesting MCS/ES symptoms.

2. The workers got workers compensation which ES patients are denied.

3. It turns out that microchips are made of epoxy. Besides the epoxy, computers and VDTs contain lethal flame retardants which are similar in effect to PCB, Phenol, Cresol, Toulene, Xylene, Ethyl benzene, Styrene as well as hundreds of other chemicals. The question one might put is this: How important are chemicals from computers in the onset of electrical sensitivity? The problems for most ES patients have come when they got a NEW VDT. It is when it is new the VDT gives off more chemicals.

One more thing. There is an article in the **Archives of Dermatology**, Vol. 115, Nov. 1979: "Persistent Photosensitivity Following Occupational Exposure to Epoxy Resin" by Herbert Allen MD and Kays Kaidbey MD. It would be interesting to follow up this case of the 8 pipefitters exposed to epoxy. Do they show any MCS/ES symptoms today? Were they sensitive

to fluorescent lights and VDTs/television like the factory workers in Sweden?

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ENDNOTES

• **NIEHS Funding**-After receiving the FDA (US Food and Drug Administration) letter of May 16, 1997 indicating that the NIEHS (National Institute of Environmental Health Sciences) would be the most appropriate government agency for funding research regarding ES, I sent a copy of the FDA letter to the NIEHS asking how ES research funding could be obtained. Since then, the NIEHS contacted me to answer my questions about the funding process. I inquired whether they must get permission from Congress or put a funding request through Congress to fund the study of electrical sensitivity. I was told that the NIEHS is mandated by Congress to understand environmental factors (including radiation) as they relate to health. Therefore, the NIEHS representative said, both electrical sensitivity and chemical sensitivity are within their funding mandate and funds are available.

According to NIEHS, the lack of studies regarding ES and MCS is due to a lack of funding requests in these areas. U.S. researchers would need to get interested in studying these topics and make application for research funds in order to get studies started with NIEHS funding. U.S. medical doctors or scientists who are part of an organization, such as a university or a research foundation, may request an RO1 grant for research into ES and/or MCS provided they have the facilities to conduct the research. For further information and application forms, contact the Office of Extramural Outreach and Information Resources, National Institutes of Health, 6701 Rockledge Drive, MSC-7710, Bethesda MD 20892-7710; phone (301) 435-0714; fax (301) 480-3963. The grant application package to request is called the Public Health Service (PHS) Grant Application Kit (PHS-398). The application process typically takes 10 months. The next application deadline is February 1, 1998.

• **Brandy Doing Well**-The ES News May-June 1996 issue presented a story about a young Labrador dog named Brandy who became ES in an EMF-unsafe home. This year the owner reports that Brandy is much improved:

"Nutrition had to reach the point where vitamin B6 (25mg for Brandy, 50mg for her people, each x1 daily) and zinc (Solgar Chelated - 22mg for both Brandy and her people, x1 daily) were in place. The B6, begun last winter, calmed Brandy's hyperactivity enough to increase her attention; the zinc, begun last spring, boosted the immune system.

"Homeopathic balance had to progress to phosphorus 30c, the remedy for electricity (which Brandy carries but does not ingest).

"The full-spectrum lighting (KIVA) had to remain also."

This summer the owner purchased a device that produces various brain wave frequencies as an experiment to see whether it would be helpful. I don't recommend this sort of equipment as it is EMF-producing and may, therefore, be or become a problem for some ES, particularly if the headphones and goggles are used. However, the story is interesting as it shows how the brain and even disease conditions can be affected by changes in the electromagnetic environment:

"Earlier this summer, we purchased a Mind Gear PR-2X Pro, a light and sound machine with special programs by Ruth Olmstead, M.A. We were trying to get Brandy's human mom's eyes working a little better again, so she would stop bumping into things with the truck. We began to explore the delta (brain wave of sleep) programs, to get some sleep for the people. It was beginning to work. Brandy, however, was the surprise. Brandy quickly learned that the delta program meant rest and relaxation, coming to lie down in the living room when the machine began its afternoon action. Within a couple of days she had become quieter, more thoughtful and attentive to commands. Her fungus infection of the ears finally cleared.

"This past Sunday was the biggest change; on the mesa, Brandy walked nearly a quarter mile with a loose leash (without being spoken to and without the compulsive, hyperactive urge to hurry). Also, Brandy has finally received her first public compliment for 'obedience'. We never thought we'd see the day."

• **PLC Report**- Dr. Marjorie Lundquist recently prepared a report reviewing the use of power line carrier (PLC) by electric utilities. PLC is a radio frequency that some electric companies send along the power line in order to stay in communication with power line workers. PLC is most commonly found on the large high-voltage transmission lines and less often on the residential distribution lines.

The use of PLC appears to be quite widespread. One Italian study at the 1996 US Dept. of Energy

EMF Conference reported finding 112 kHz - 370 kHz range magnetic fields under many high voltage power lines in Italy and under one in Sweden.[1] This study pointed out that prior health effects studies have not considered this factor when determining EMF exposures.

I asked Dr. Duane Dahlberg whether there was a connection between PLC and some cases of stray voltage. He replied, "I have been aware of a couple of cases where the PLC seemed to be one of the factors connected with the effects in dairy barns."

Dr. Lundquist's report about PLC use can be ordered from her at PO Box 11831, Milwaukee WI 53211-0831.

Reference

1. Project Abstracts: The Annual Review of Research on Biological Effects of Electric and Magnetic Fields from the Generation, Delivery and Use of Electricity. DOE Conference 17-21 Nov. 1996. Frederick, MD: W/L Associates, Ltd., 1996, p. 105.
Contact: W/L Associates, Ltd., 7519 Ridge Rd., Frederick MD 21702-3519; phone: (301) 663-1915.

- **Energy Allergy**-Can food and water allergic reactions sometimes be related to their electromagnetic charges? For some ES, the answer appears to be "yes".

What do I mean by charged food and water? The work of Dr. Jean A. Monro in England has shown that water treated with an EMF exposure at a frequency the person is sensitive to can induce ES symptoms when the water is placed in a glass tube and held by the reactive person.[1,2,3] Conversely, water charged at a non-reactive frequency can have a calming effect when the ES person holds the vial of non-reactive charged water. Considering that our food and water can be exposed to various EMFs before purchase and during the cooking process, the possibility of energy-related food allergies is apparent.

For example, Diana Crumpler in Australia offered to share with us her experience of finding a suitable drinking water. Needing a chemically safe water, she found Evian water from France in glass bottles was chemically tolerable, but instead gave her the type of reaction she associates with EMF exposure and not chemical exposure, although she is both MCS and ES.

She found that burying the bottled water in the ground for a few weeks eliminated her reaction to the water. She explains this phenomenon by saying "Presumably, the earth's own EMR signal is superimprinted onto the water, thus neutralising the other (signal)."

Some of the more obvious ways that electromagnetic radiation can charge, and electromagnetically change, food and water sources include:

- water machines that use ultraviolet treatment in the purification process
- sun tea
- solar box cooking
- microwave oven cooking
- irradiated food

On a cautionary note, burying water to recharge it may not be helpful for some, as the U.S. and Canada have ground currents from the military project Sanguine which uses the earth to transmit communications to submarines in the Atlantic and Pacific Oceans. Other potential adverse factors include the Taos Hum source, geopathic stress, stray voltage, and proximity to EMF-generating sources.

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2. Smith, Cyril W., Ph.D., Ray, Y.S. Choy, M.B., B.S., and Jean A. Monro, L.R.C.P., M.R.C.S. "The Diagnosis and Therapy of Electrical Hypersensitivities." Clinical Ecology, Vol. VI, No. 4, pp. 119-128.
3. Monro, Dr. Jean A. "What are Electrical Sensitivities?" Electrical Sensitivity News, Vol. 1, No. 1, pp. 1-2.

- **Study Finds Shielding Helpful**-The following is reprinted by permission from Sweden's magazine **Working Environment**, 1994:[1]

Screening off electricity helps

People who are hypersensitive to electric fields get better when the electricity is screened off. Their colleagues understand their problem better, their employer listens and they are happy that something is being done to help them. This is shown in a study carried out at the Luleå Institute of Technology.

Twenty-nine electro-hypersensitive people were interviewed, nine men and 20 women. Their workstations had all been screened off thanks to money from the Swedish Working Life Fund. Most of them got their first symptoms when working at display terminals.

The most common measure was reducing electrical fields to a minimum. Six of the companies would not have been able to afford the measures without Fund financing.

Electro-hypersensitive people are worried about being accused of having mental problems if they see a doctor. It is wrong to force people into treatments that threaten their integrity, writes the author of the study, Susanne Hjortsberg. In her

view, measures should aim instead at the cause of the problem, and screening off electric fields should be classified as a method of treatment.

Reference

1. "Screening off electricity helps." Working Environment, 1994, p. 14, (English edition).
Contact: Working Environment, Box 17550, S-118 91 Stockholm, Sweden.

• **Swedish ES Study**-The Swedish Council for Work Life Research has been commissioned by the Swedish government to evaluate international research regarding ES and other EMF health hazards such as cancer and Alzheimer's disease. The Council typically spends 8 million Swedish kronor annually on EMF health effects research. Their interim report will be submitted to the Swedish government by March 1, 1998.

Reference

1. "Electromagnetic fields." Swedish Council for Work Life Research Newsletter, January 1997.
Contact: Swedish Council for Work Life Research, Box 1122, S-111 81 Stockholm Sweden.

• **EMFs on US Survey**-The newspaper USA Today surveyed about one thousand Americans regarding what they fear. Electromagnetic fields were mentioned by 16%, while related items such as getting Alzheimer's worried 35% and having cancer worried 53%.

Reference

1. "What Americans Fear." USA Weekend, 22-24 Aug. 1997, p. 5.

• **Australian Cellular**-In May, 1997, the Australian Democrats issued a media release calling for:

"• a review of the Australian mobile phone safety standard;
- *a review of advertising guidelines for mobile phones, in particular, the targeting of very young people;*
- *a transfer of the responsibility of mobile phone policy from the Department of Communications (DOCA) to the Health Department; and*
- *a requirement for mobile phone companies and medical practitioners to record health complaints relating to mobile phone use in particular and exposure to other EMR producing telecommunications equipment."*[1]

This media release was prompted by the government's refusal to reconsider the cellular phone radiation standards. The media release continues:

"Ironically, the Government's position was announced on the same day a medical study reported "hot spots" in the head, dizziness, nausea, and blurred vision by frequent mobile phone users.

"Responding to a question from the Democrat Spokesperson on Telecommunications, Senator Lyn Allison, the Minister for Communications, Senator Richard Alston repeated his view that 'there is no substantiated evidence of adverse health and safety effects from radio frequency emissions at typical levels.'

"Senator Allison said the Government's position was getting harder to defend.

"She said: 'Not so long ago, we learned that microwave emissions can break strands of DNA. Last week, we learned that mice exposed to mobile phone emissions are twice as likely to develop cancer. Today, an occupational medical expert reports consistent symptoms in an unrelated group of mobile phone users. The Government is sounding increasingly like an apologist for a business resembling the tobacco industry of the fifties,' Senator Allison said."

The following week, the Australian Democrats issued another media release, this one calling for a moratorium on cellular tower sitings at schools.[2] Also, the Electromagnetic Radiation Alliance of Australia's newsletter published photos that show large crowds of people who turned out to oppose cellular tower sitings, particularly at Thirroul and Hornsby in July, 1997.[3]

References

1. Allison, Lyn Senator. "Government refuses to review mobile phone safety standard as study reveals 'hot spots' in users' heads." (media release) 7 May 1997, Australia.
Contact: Senator Lyn Allison, Australian Democrats, Democrat Spokesperson on Telecommunications, Australia, phone (015) 691-512.
2. Elliott, Mike. "Stop school phone towers: Democrats." (media release) 13 May 1997.
Contact: Mike Elliott, Democrat Parliamentary Leader, Member of the Legislative Council, Australian Democrats, phone 8237 9276.
3. "Let Them Eat Cake." EMRAA News, Aug. 1997, pp. 1-2.
Contact: EMRAA, PO Box 589, Sutherland Australia 2232, Phone: 02 9545 3077.

• **Antennas on Electric Meters**-Someone called me in September 1997 about placement of radio/microwave frequency antennas on residential electric meters in the St. Louis, Missouri area. According to this report, the antennas were installed during the day without notice or mention in the paper. Some of the chemically/EMF sensitive were finding these new EMF transmitters troublesome. The antennas will allow the electric utility to monitor electric usage at each home, etc. without using human meter readers — the antennas will send this information by wire-

less to the utility's monitoring center for billing purposes. This caller was planning to ask the utility to remove her home's transmitter and offer to pay to have a human meter reader instead.

• **Proceedings of ES Conferences**-Four international scientific conferences have highlighted ES to date. The following list provides contact information to obtain copies of these proceedings:

1) "El - overfølsomhed-Eksisterer problemet? Problemet, eksisterer!", 1st Copenhagen Meeting on Electromagnetic Hypersensitivity, 1994. Available only in Danish. Price: 60 DKK in Denmark, 150 DKK outside Denmark. Enclose a business check or international money order in Danish kroner payable to the Danish Association for the Electromagnetically Hypersensitive.

Contact: Danish Association for the Electromagnetically Hypersensitive, c/o Aase Thomassen, Lunden 1, Alum, DK-8900 Randers, Denmark.

2) "Electromagnetic Hypersensitivity", 2nd Copenhagen Conference on Electromagnetic Hypersensitivity, 1995. (In English) Price: 120 DKK in Denmark, 210 DKK outside Denmark. Same ordering and contact information as #1. A copy of this report is also available through Weldon Publishing, PO Box 4146, Prescott AZ 86302 USA for US inquiries at a cost of $8 by permission of the Denmark ES support group.

3) "Electromagnetic Hypersensitivity", COST 244: Biomedical Effects of Electromagnetic Fields, 1994, Graz, Austria. (In English) Inquire regarding the cost. Contact: Prof. Dr. Norbert Leitgeb, Dept. for Clinical Engineering, Institute for Biomedical Engineering, Graz University of Technology, Inffeldgasse 18, A-8010, Graz, Austria, or Dr. Dina Simunic, COST-244 External Secretariat, Technical University School, Dept. of Electrical Engineering and Computing, UNSKA Street 3, HR-10000 Zagreb, Croatia.

4) "Bioelectricity", The 15th Annual International Symposium on Man and His Environment in Health and Disease, 1997, Dallas, Texas. Available as cassette (audio) tapes only. US and Canada price: $183 USD; outside the US/Canada: $218.75 USD, payable to Professional Audio Recording at 2300 Foothill Blvd., #409, LaVerne CA 91750 USA. Tapes for this symposium may also be purchased individually. For a list of the 20 tapes available, contact the American Environmental Health Foundation, 8345 Walnut Hill Lane, Suite 225, Dallas, Texas 75231-4262; phone: 1-800-428-2343.

• **Congressional Response**-In the Sunday, September 14, 1997 issue of The New York Times, the newspaper reported that New York City is in the process of approving a 15-year lease with Bell Atlantic and Omnipoint telecommunications companies.[1] The agreement would grant each company permission to use 3,000 lampposts, traffic-light poles or highway signs as wireless antenna locations. The paper reported that the Cellular Phone Taskforce picketed in front of city hall to raise public concern about this proposal. The group also collected about 2,000 signatures on petitions from the concerned public. New York City's health officials were interviewed by the paper about this development and they said that while they were sympathetic of the public's fear regarding the new antennas, the health officials saw no public health risk.

In response, I mailed a letter to the Commissioner of New York City's Health Dept. outlining electrical sensitivity, with supporting articles regarding Soviet studies of microwave sickness. Also, I sent copies of this letter to related city agencies and others. In a refreshing turn of events, so far I have received a letter from Congressional Representative Charles E. Schumer of New York who writes:

> *"Thank you for your powerful and moving letter about electrical sensitivity. I will work all the harder to keep the Doppler* (radar) *away from where people live, work and play. All the best."*[2]

Apparently, he is assisting his constituents in opposing the placement of a Doppler Weather Radar system in the Mill Basin area of Brooklyn as reported in a recent New York newspaper.[3] This letter is the first time any Congressional member has responded to my letters. Contact information for Congressman Schumer is 2211 Rayburn House Office Building, Washington DC 20515; phone: (202) 225-6616.

Also, the New York State Dept. of Health responded promptly, saying in effect that they were aware of the Soviet studies and various national scientific committees had considered the Soviet work prior to setting U.S. standards. The letter suggested that if ES is shown to be "unequivocally demonstrated by future studies", then ES would also be considered in setting future radiation standards.[4]

References

1. McKinley, Jesse. "City May Grow More Wired Still." New York Times, 14 Sept. 1997, The City section.
2. Schumer, Charles E. Member of Congress. Letter to Lucinda Grant, Electrical Sensitivity Network. 6 Oct. 1997.
3. Ford, Ruth. "Residents Galvanize Against FAA Radar Tower Plans." Park Slope Courier, 8 Sept. 1997, p. 16.
4. Rimawi, Karim, Ph.D., Director, Bureau of Environmental Radiation Protection, State of New York, Dept. of Health. Letter to Lucinda Grant, Electrical Sensitivity Network. 7 Oct. 1997.

PO Box 4146
Prescott, AZ 86302 USA
Phone: (520) 778-4637

ELECTRICAL SENSITIVITY NETWORK

September 17, 1996

Frederick Isler
Assistant Staff Director for Civil Rights Evaluation
Civil Rights Commission
624 9th St. NW, 7th Floor
Washington DC 20425

Dear Mr. Isler:

Charles Rivera at the Civil Rights office suggested I write you as you will be heading the Americans with Disabilities Act study with an employment focus.

The Electrical Sensitivity Network is a national support and advocacy group for the electrically sensitive (ES). Being ES means that we have an environmental illness that is triggered by exposure to electromagnetic fields (EMFs). Our health and sometimes life depend on being able to sufficiently avoid exposure to EMFs. This task is becoming more difficult all the time. With the recent passage of the Telecommunications Act of 1996, we are soon going to have no place left to go with cellular and telecommunications antennas proliferating everywhere—even to the point of beaming microwaves at the entire earth from satellites. (See Motorola's project mentioned on page 11 of the enclosed newsletter.)

While what we really need is a hearing to evaluate how we can maintain some measure of our civil rights through this technological advance, I hope that initially at least we might get involved with your pending ADA review. I've enclosed a letter sent to the National Council on Disability regarding my concerns that ES is not being fairly handled in the workplace, a letter that went unanswered. I think we are the only disability group that is not expected to use a computer, and indeed many Network members, including myself, were once computer users until the computer brought forth the ES symptoms, forcing disability or termination of one's career for safer work.

And how shall we be hired now—we cannot use <u>any</u> computers or be within two rooms of them? Where will we go? No one I know has yet won a worker's compensation case based on electrical sensitivity. If we are not totally disabled, we are not eligible for Social Security and find ourselves in the damning position of seeking work with less EMF exposures. And, where will that be?

If ever there was a group needing civil rights protection, at this time in history, it is the ES. We find ourselves outcasts in a world of political correctness; we are needing justice when the wheels of industry seek to prevail. Will your Commission help us?

Sincerely,

Lucinda Grant

LG:ja

Enclosures

PO Box 4146
Prescott, AZ 86302 USA
Phone: (520) 778-4637

ELECTRICAL SENSITIVITY NETWORK

September 19, 1996

Reed E. Hundt
Chairman
Federal Communications Commission
1919 M Street NW
Washington DC 20554

Dear Mr. Hundt:

One critical oversight in the passage of the Telecommunications Act of 1996 and in subsequent establishment of applicable radiation standards was neglect of the electrically sensitive (ES) population—people who are made ill when exposed to normal levels of electromagnetic fields (EMFs). The ES must, by medical necessity, avoid EMF exposure.

As the future proliferation of telecommunications technology engulfs the entire earth in microwave broadcast transmissions, even from satellites, where will the ES go then? Under the present FCC radiation standards, the ES will be physically tortured by this flood of electromagnetic sources beyond their control. Some of the most sensitive may die from exposure to certain frequencies that are life-threatening for them, particularly those who develop heart irregularities when EMF exposed. This problem is very serious; the health and life of this disabled group is at risk.

This vital disability issue must be addressed as part of the Americans with Disabilities Act. I implore your office to plan a hearing to discuss how the problems of electrical sensitivity can be accommodated within this novel technological onslaught.

Sincerely,

Lucinda Grant
LG:ja

cc: FCC Commissioners:
Andrew C. Barrett
Rachelle B. Chong
Susan Ness
James H. Quello
National Council on Disability
President Bill Clinton
The EMR Alliance

Enclosure

PO Box 4146
Prescott, AZ 86302 USA
(502) 778-4637

ELECTRICAL SENSITIVITY NETWORK

June 10, 1997

Dear County Planning and Zoning Commission Members:

This letter with attachments is an overview of current concerns surrounding the installation of cellular antenna towers. The most serious of these concerns regards the health issues, primarily cancer and electrical sensitivity (ES). People who are ES are those who become ill when exposed to a variety of electromagnetic radiation sources such as computers, power lines, motors, and cellular antennas. The Electrical Sensitivity Network is a national support group for the ES and is located in the Prescott area.

As director of ESN, I am concerned about the proposed cellular antenna sites in the Humboldt and Mayer areas, which will be addressed at the June 18 meeting of the County Planning and Zoning Commission.

These antenna requests should be a wake-up call regarding the impending proliferation of various wireless services which will soon be upon us. For the electrically sensitive, these antennas are health risks with the potential for life-threatening effects. In a recent ES survey, chest pain and heart problems were among the most commonly reported symptoms when EMF exposed.

In this community, there are many chemically sensitive (MCS) people. They were chemically poisoned and now seek refuge in clean rural areas; Prescott and the surrounding area are among the locations that environmental medicine doctors recommend to these patients. The legal problem that the County had regarding the use of lignosite on dirt roads a few years ago points out a prior dilemma the County had by not addressing the concerns of the MCS. The MCS are at higher risk of also becoming ES, due to nervous system damage from neurotoxic chemicals. The nervous system is a primary site impacted by electromagnetic exposures.

At this time, nearly 200 moratoriums are in place across the USA in an attempt to provide time for proper planning regarding the placement of cellular and other wireless antenna services. I recommend that this community put in place immediately a 6-month moratorium on antenna sitings to forestall immediate problems that could develop by improper planning or lack of planning in the placement of these antennas.

For instance, cellular carriers are targeting churches, schools, and even hospitals in an effort to obtain siting locations, offering much needed rental income

in exchange. Because cancer and ES are not generally reversible despite any amount of money, the risk is not worth the rental income. Due to the uncertainty of the safety of this technology in general—as the FDA admits—schools and hospitals should not be acceptable siting locations.

At this time, I anticipate a class action lawsuit on behalf of the ES to address our concerns on a national level, as the government has not done so. We need as much time as possible to delay the antenna placements in this area. The Telecommunications Act of 1996 states that local governments cannot oppose antenna sitings based on health issues. This preemption of local law is being questioned as unconstitutional in some quarters. The courts will decide. In the meantime, the local governments need to protect the public as best they can; one way is to institute a renewable moratorium to address and plan for the antenna locations while minimizing public exposures as much as possible. The careful planning of these sitings is critical, even a matter of life and death for the most ill. Please defer the decision on these sitings until a formal planning process can be instituted during a moratorium.

Sincerely,

Lucinda Grant

Lucinda Grant
Director

LG:ja
Attachments

September 26, 1997

Lucinda Grant
Electrical Sensitivity Network
PO Box 4146
Prescott AZ 86302
Phone: 520-778-4637

Ms. Margaret A. Hamburg, MD
Commissioner
Department of Health
City of New York
125 Worth Street
New York NY 10013

Dear Dr. Hamburg:

The New York Times article of September 14, 1997 entitled "City May Grow More Wired Still" states "City health officials say that while they understand peoples fears, they see no public health risk" regarding cellular phone and other wireless technology.

The electrically sensitive people are not only concerned about the health hazards of this electromagnetic radiation (EMR), but are made very ill when exposed to EMR sources. This illness can have life-threatening complications; our last survey in our national support group showed chest pain and heart problems among our most common symptoms when EMR exposed.

Electrical sensitivity (ES) has historically been known as microwave sickness and radiowave sickness. While you may be under the impression that there is no evidence of ES in scientific studies, actually there is considerable mention of it in Soviet/East European literature of the 1960's and 1970's. A few examples are enclosed. Please note that these studies predicted the symptoms of our modern society's EMR exposures. More recently, Sweden has published several studies related to ES research. In addition, four international conferences have focused on ES.

I receive letters and phone calls both nationally and internationally from people experiencing illness concommitant with the installation of new wireless services in their area. These symptoms abate if the person can avoid the exposure by leaving the area.

The most serious and frightening consequence of the advent of this wireless expansion internationally is that the electrically ill are running out of places to go to escape the radiation exposure to remain without symptoms. Indeed, even hospitals are allowing cellular towers in their midst, which I see as a violation of the Americans with Disabilities Act, for how can a community not allow someone safe hospital access. Further, how can a community not allow access to their city by building electronic barriers and drive out the electrically injured in their midst with increased radiation emissions. This has already happened and apparently will continue to happen in New York City.

As you may already know, the body's induced current from EMR exposure intensifies with higher frequency exposures. While microwave transmissions were typically restricted to radar and point-to-point communications in the past, now microwave -a high frequency radiation- is being broadcast similiar to radiowaves of the past. The general public has never been exposed to this type of radiation in such a pervasive, random fashion. Certain at-risk groups have been disregarded:

* infants
* elderly
*pregnant women
*cardiac pacemaker wearers
*cardiac patients, in general
*glaucoma patients (microwaves can interfere with the medication)
*epilepsy patients
*asthma patients (per Soviets, asthma can be microwave symptom)
*cataract patients (microwaves can worsen cataracts)
*diabetic patients (microwaves can affect blood sugar)
*cancer patients (if EMR is a cancer promoter, increases risk)
*electrically sensitive patients
*other patients more at risk of developing ES due to nervous system damage:
-multiple chemical sensitivity patients (MCS)
-chronic fatigue syndrome patients (CFS)
-mercury-poisoned patients

Continuing to turn a blind eye to this segment of the population adversely affected by EMR exposure will not remedy matters nor make the problems less severe. When faced with a public health problem, typically historical information is not the only basis upon which a problem is judged, for some diseases have little or no historical precedent. In the case of microwave sickness, historical facts are enclosed including a joint US-USSR study replicating microwave effects, including cholinesterase inhibition at .5 mW/cm2. As your health agencies will know, agents which produce cholinesterase inhibition are very poisonous. Microwaves can inhibit cholinesterase at low levels, so exposing the general public to a poison of this caliber 24 hours daily for life is obviously ludicrous. In fact, Soviet and East European workers who would be exposed to microwaves were pre-screened to exclude at-risk groups such as the above. Even so, the Soviets suggested that microwave exposure at the 1mW/cm2 not exceed 20 minutes and was allowed only if the worker wore protective goggles.

In conclusion, New York State Supreme Court Appellate Division ruled on May 6, 1982 that they were provided "...with ample evidence of the existence of a disease identified as "microwave or radiowave sickness." Dr. Zaret's own studies, including those performed for the United States Government and excerpts of reports from the Warsaw Conference of 1973 which documented the diagnosis of such a disease in other countries, substantiate this conclusion..." (The Microwave Debate, Nicholas H. Steneck).

Not only is historical information generally considered in a public health problem, but also current evidence of the problem within society. Along this line, I am enclosing a letter and fact sheet from the EPA's Region 6 Administrator who wrote in response to Senator Phil Gramm's

request re ES on behalf of his constituents. Also, an October 1997 New York City HEAL MCS support group newsletter page is enclosed that indicates many people are suffering similiar symptoms in New York City without a clear explanation.

The problem is not about health "concerns", but about health and for some the difference between living or being tortured to death by an exposure from which they cannot escape. What America is facing is a microwave sickness outbreak in a population ignorant of radiation's consequences. I suggest the problem calls for a plan of action among public health and disability agencies. Generally, outbreaks of sickness are evaluated on-site to assess the problem. Where are your epidemiologists?

Sincerely,

Lucinda Grant

Lucinda Grant
Director

cc: Barbara A. DeBuono, MD, MPH, NY State Health Dept.
Mark H. Leeds, NYC Mayor's Office for People with Disabilities
Dr. Nancy Jeffrey, NYC Office of Environmental Epidemiology
Jane Brody, The New York Times
Cathy Bergman-Venezia, The EMR Alliance
Arthur Firstenberg, Cellular Phone Taskforce